

IN THE SPECIFICATION:

Please amend the specification as follows:

The following typographical error should be corrected:

In formula number 3, page 7, the term "R₁" should be replaced with the term --- R₄ ---;

IN THE CLAIMS:

Please amend the claims as follows:

Please cancel claims 1 - 21, without prejudice.

Please add new claims 22 - 46 as shown below:

22. Copolymers comprising a polymer backbone having pendant groups, which comprise monomer units of at least three different classes selected from:

- (a) monomers having sulphate groups,
- (b) monomers having sulphonate groups,
- (c) monomers having sulphamate groups, and
- (d) monomers having polyoxyalkylene ether groups.

see cl 43
unsat - (SR) - heparin

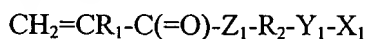
23. Copolymers comprising a polymer backbone having pendant groups, which comprise monomer units of at least three different classes selected from:

- (a) monomers having sulphate groups,
- (b) monomers having sulphonate groups,
- (c) monomers having sulphamate groups,
- (d) monomers having polyoxyalkylene ether groups, and
- (e) monomers having zwitterionic groups.

24. Copolymers according to claim 22 which contain additional monomer units derived from acrolein.

25. Copolymers according to claim 23 which contain additional monomer units derived from acrolein.

26. Copolymers according to any one of claims 22, 23, 24, or 25 wherein said monomer units in classes (a), (b) or (c) have the formula:



where

R₁ is selected from H and CH₃;

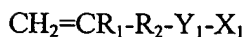
R₂ is selected from linear or branched alkylene groups of 2 - 10 carbon atoms, phenylene, phenyl alkylene with 1 - 10 carbon atoms in the alkylene structure, and the polyalkylene group (CH₂-CHR₁-O)_n where R₁ is selected from H and CH₃ and n is from 2 to 50;

Z₁ is selected from oxygen (-O-) to give an ester linkage and secondary amine (-NH-) to give an amide linkage;

Y₁ is (-O-) or (-NH-) or is absent; and

X₁ is a sulphonate anionic group (-SO₃⁻); balanced by a physiologically-acceptable cation.

27. Copolymers according to any one of claims 22, 23, 24 or 25 wherein said monomer units in classes (a), (b) or (c) have the formula:



where

R₁ is selected from H and CH₃;

R₂ is selected from linear or branched alkylene groups of 2 - 10 carbon atoms, phenylene, phenyl alkylene with 1 - 10 carbon atoms in the alkylene structure, and the polyoxyalkylene group (CH₂-CHR₁-O)_n where R₁ is selected from H and CH₃ and n is from 2 to 50;

Z₁ is selected from oxygen (-O-) to give an ester linkage and secondary amine (-NH-) to give an amide linkage;

Y₁ is (-O-) or (-NH-) or is absent; and

X₁ is a sulphonate anionic group (-SO₃⁻); balanced by a physiologically-acceptable cation.

28. Copolymers according to claim 26 wherein the monomer units containing sulphate groups are selected from salts of 2-sulphatoethyl methacrylate, 2-sulphatoethyl acrylate, 3-sulphatopropyl methacrylate, 3-sulphatopropyl acrylate, 4-sulphatobutyl methacrylate, 4-sulphatobutyl acrylate, 2-sulphatoethyl methacrylamide, 2-sulphatoethyl acrylamide, 3-sulphatopropyl methacrylamide, 3-sulphatopropyl acrylamide, 4-sulphatobutyl methacrylamide, 4-sulphatobutyl acrylamide, sulphato polyoxyalkylene methacrylate, and sulphato polyoxyalkylene acrylate.

29. Copolymers according to claim 27 wherein the monomer units containing sulphate groups are selected from salts of allyl sulphate, methyl allyl sulphate, 3-buten-1-sulphate, 3-buten-2-sulphate, 2-methyl-2-propane-1-sulphate, 2-methyl-3-buten-1-sulphate and 3-methyl-3-buten-1-sulphate.

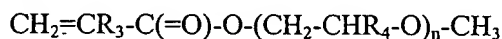
30. Copolymers according to claim 26 wherein the monomer units containing sulphonate groups are selected from salts of 2-sulphoethyl methacrylate, 2-sulphoethyl acrylate, 3-sulphopropyl methacrylate, 3-sulphopropyl acrylate, 2-acrylamide-methylpropanesulphonate, 3-sulphopropyl ethoxy methacrylate, 3-sulphopropyl ethoxy acrylate, 3-sulphopropyl polyoxyalkylene methacrylate, and 3-sulphopropyl polyoxyalkylene acrylate.

31. Copolymers according to claim 27 wherein the monomer units containing sulphonate groups are selected from salts of vinyl sulphonate, allyl sulphonate, methyl allyl sulphonate and p-styrene sulphonate.

32. Copolymers according to claim 26 wherein the monomer units containing sulphamate groups are selected from salts of 2-sulphamatoethyl methacrylate, 2-sulphamatoethyl acrylate, 3-sulphamatopropyl methacrylate, 3-sulphamatopropyl acrylate, 4-sulphamatobutyl methacrylate, 4-sulphamatobutyl acrylate, 2-sulphamatoethyl methacrylamide, 2-sulphamatoethyl acrylamide, 3-sulphamatopropyl methacrylamide, 3-sulphamatopropyl acrylamide, 4-sulphamatobutyl methacrylamide, 4-sulphamatobutyl acrylamide, sulphamato polyoxyalkylene methacrylate and sulphamato polyoxyalkylene acrylate.

33. Copolymers according to claim 27 wherein the monomer units containing sulphamate groups are selected from salts of allyl sulphamate and methyl allyl sulphamate.

34. Copolymers according to any one of claims 22, 23, 24 or 25 wherein said monomer units in class (d) have the formula:

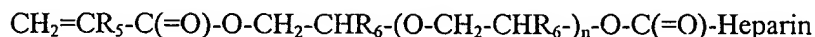


where R_3 and R_4 , which may be the same or different, are each selected from H and CH_3 ; R_7 is selected from H and alkyl with from 1 to 5 carbon atoms; and n is from 2 to 50.

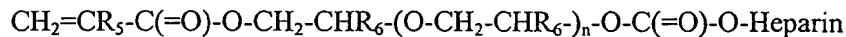
35. Copolymers according to claim 22 or 23 wherein said polymers additionally contain additional monomer units derived from monomer units having heparin linked to a polymerizable moiety having a carbon-carbon double bond.

36. Copolymers according to claim 35 wherein the heparin monomer units comprise polymerizable groups selected from vinyl, allyl, methallyl, acrylate and methacrylate groups.

37. Copolymers according to claim 32³⁵ wherein the heparin monomer units have the formula:



or



where R_5 and R_6 , which may be the same or different, are each selected from H and CH_3 ; and n is from 0 to 49.

38. Copolymers according to claim 22 or 23 wherein said polymers additionally contain additional monomer units derived from monomer units having hiruden, warfarin or hyaluronic acid linked to a polymerizable moiety having a carbon-carbon double bond.

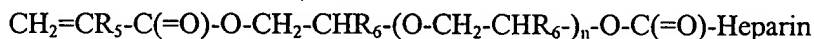
39. A medical device having a coating of a polymer according to claim 22 or 23.

40. A method of forming a coating of a polymer according to any one of claim 22 or 23 on a medical device, which comprises forming an ungelled partial polymer by reacting a solution of an amine polymer with a crosslinking agent, activating the medical device by solution coating with said partial polymer, and depositing the polymer on the resulting activated medical device.

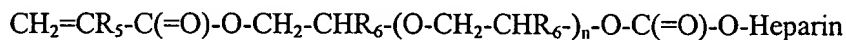
41. A method according to claim 40 wherein the amine polymer is polyethylene imine.

42. A method according to claim 40 wherein the crosslinking agent is an aliphatic monoisocyanate or diisocyanate.

43. A heparin monomer having the formula:



or



where R_5 and R_6 , which may be the same or different, are each selected from H and CH_3 ; and n is from 0 to 49.

44. A method of forming a heparin monomer according to claim 43, wherein a hydroxyl terminated compound of the formula:

